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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/720,358	02/15/2001	Christopher J. Lloyd	39-227	1182

7590 08/18/2003  
Nixon & Vanderhye  
1100 North Glebe Road 8 th Floor  
Arlington, VA 22201-4714

EXAMINER

STOCK JR, GORDON J

ART UNIT	PAPER NUMBER
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2877

DATE MAILED: 08/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 09/720,358	Applicant(s) LLOYD, CHRISTOPHER J.	
	Examiner Gordon J Stock	Art Unit 2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 June 2003.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 and 18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2 is/are allowed.
- 6) ☒ Claim(s) 1,3-14 and 18 is/are rejected.
- 7) ☒ Claim(s) 15 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 03 June 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s) _____   |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other:  |

## DETAILED ACTION

### *Drawings*

1. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on June 3, 2003 have been approved.
2. The corrected or substitute drawings were received on June 3, 2003. These drawings are accepted.

### *Specification*

3. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

### *Claim Objections*

4. **Claim 7** is objected to for the following: the term, "the another species," lacks antecedent basis. Correction is required.

### *Claim Rejections - 35 USC § 103*

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 1, 3-11, 14, and 18** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Palo (6,556,296)** in view of **Wickersheim (5,304,809)**.

As for **claims 1, 8, 9, and 18**, Palo in a method for characterizing samples by determination of a function of at least one specific property of particles in a sample discloses the following: signals, photon counts, are detected, the duration of each interval between successive

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signals is measured; wherein excitation is delivered to a plurality of samples from a single source, and signals from each sample are received by a single detector in order to derived to represent a characteristic response, a specific physical property characterizing the fluorescent units; whereas the timing of the signals is determined from a predetermined portion of each signal, the portion being the actual photon count (col. 3, lines 5-25 and lines 45-55; col. 5, lines 10-65; col. 7; lines 50-55; col. 8, lines 10-35).

As for the emission being longer than the excitation pulse, Palo discloses the excitation pulses are picosecond or subpicosecond pulses (col. 8, lines 33-35) and that the time intervals of the simulated time interval distributions were 0 to 40 microseconds (col. 9, lines 15-20) and a 10 second duration experiment (col. 9, lines 35-40). It would be obvious to one skilled in the art at the time the invention was made that emission pulses emitted long relative to the duration of the excitation for the excitation was subpicosecond to picosecond and the detection of emission signals persisted to 40 microseconds. In addition, Wickersheim in a luminescent decay time measurement teaches that emission signals persist longer than excitation pulses (Figs. 3-4). Therefore, it would be obvious to one skilled in the art at the time the invention was made that the emission emits a series of signals over a period of time long relative to the excitation pulse, for luminescent decay profiles are long relative to the excitation pulse.

As for the interval between the excitation and the emission to the interval between each signal and preceding signal, Palo is silent. However, Palo discloses measuring length of intervals between photon counts and a function is determined on basis of series of functions of the lengths of time intervals (col. 3, lines 50-55). And discloses measuring the length of time between photon counts separated by a given number of intermediate photon counts and a series

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of functions may be built by measuring time intervals between photon counts separated by different numbers of intermediate photon counts (col. 5, lines 10-20). Therefore, it would be obvious to one skilled in the art at the time the invention was made that a relationship relating the interval between the excitation transient and the emission of each signal to the interval between each signal and the preceding signal was performed, for a function based on a series of functions which are based on measurements of intervals between consecutive and intermediate photon counts are made such as the interval between the excitation and subsequent emission and the intervals between the intermediate emission signals.

As for **claim 3**, Palo in view of Wickersheim discloses everything as above (see **claim 1**). In addition, Palo discloses the excitation transient is a pulse (col. 8, lines 30-35).

As for **claims 4-5**, Palo in view of Wickersheim discloses everything as above (see **claim 1**). Palo discloses a single measurement range (col. 9, lines 15-20). And Wickersheim discloses using a single excitation to eliminate variations between the pulses (col. 8, lines 15-25). Therefore, it would be obvious to one skilled in the art to use a single excitation transient in order to eliminate variations between pulses. As for a series of excitations, Wickersheim discloses averaging in order to offset variations between pulses (col. 8, lines 15-25). Therefore, it would be obvious to one skilled in the art at the time the invention was made to average in relation to a series of excitation transients in order to offset variations between pulses.

As for **claim 6**, Palo in view of Wickersheim discloses everything as above (see **claim 1**). In addition, Palo discloses fluorophores (col. 3, lines 5-11).

As for **claim 7**, Palo in view of Wickersheim discloses everything as above (see **claim 1**). In addition, Palo discloses fluorescent units within liquid samples. Therefore, energy transfer

will occur from emission, scattering, or reflecting radiation from the units to the surrounding liquid medium (col. 3, lines 5-15).

As for **claims 10-11**, Palo in view of Wickersheim discloses everything as above (see **claim 9**). In addition, Palo discloses each of a plurality of samples receives an excitation in turn and signals are detected in turn and each of the plurality of samples receives an excitation simultaneously and detected in parallel (col. 5, lines 30-53; col. 7, lines 50-55).

As for **claim 14**, Palo in view of Wickersheim discloses everything as above (see **claim 1**). They are silent concerning a bleaching rate of a fluorophore. However, Palo discloses that specific physical property derived is generally a physical measurable property having a certain value for one species (col. 3, lines 15-20). Therefore, it would be obvious to one skilled in the art that a bleaching rate is measured, for a bleaching rate of a fluorophore is a specific physical property.

7. **Claim 12** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Palo (6,556,296)** in view of Wickersheim (**5,304,809**) further in view of **Gillispie et al. (5,828,452)**.

As for **claim 12**, Palo discloses everything as above (see **claim 1**). However, he is silent concerning a property of the excitation being used to normalize signals. Gillispie in a system for removing overlap in time of detected emissions teaches that data should be normalized for fluctuations in the excitation source's intensity (col. 11, lines 35-41). Therefore, it would be obvious to one skilled in the art to normalize the detected signals because of the fluctuation of the excitation source's intensity.

8. **Claim 13** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Palo (6,556,296)** in view of **Wickersheim (5,304,809)** further in view of **Deka et al. (5,909,278)**.

As for **claim 13**, Palo discloses everything as above (see **claim 1**). However, he is silent concerning a property of the excitation being recorded and deconvoluted from the detected signal. Deka in a time-resolved fluorescence decay measurements teaches that the true fluorescence signal is a convolution of the impulse response function and excitation light pulse, and that the signal needs to have the excitation signal deconvoluted to extract the fluorescent decay (col. 7, lines 35-67). Therefore, it would be obvious to one skilled in the art to record the excitation signal in order to be able to deconvolute it from the detected signal to get the actual fluorescence decay impulse response function.

***Response to Arguments***

9. Applicant's arguments, see Remarks (pages 4-6), filed June 3, 2003, with respect to the rejection(s) of claim(s) 1, 3-8, 12-15 under 35 U.S.C. 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of newly found prior art (see above). However, **claim 15** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Allowable Subject Matter***

10. **Claim 2** is allowed.

**Claims 15** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As to **claim 2**, the prior art of record, taken alone or in combination, fails to disclose or render obvious the particular method of providing a measure of the characteristic response of the medium, in combination with the rest of the limitations of **claim 2**.

As to **claim 15**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in an apparatus for carrying out a method of providing a measure of the characteristic response of a medium means for plotting the interval between the excitation and the emission of each signal against the interval between each signal and the preceding signal in the series, in combination with the rest of the limitations of **claim 15**.

#### *Conclusion*

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

U.S. Patent 4,437,772 to Samulski

U.S. Patent 6,137,584 to Seidel et al.

U.S. Patent 6,515,289 to Kask

WO 98/23941 to Seidel et al.

#### *Fax/Telephone Numbers*

If the applicant wishes to send a fax dealing with either a proposed amendment or a discussion with a phone interview, then the fax should:

- 1) Contain either a statement "DRAFT" or "PROPOSED AMENDMENT" on the fax cover sheet; and
- 2) Should be unsigned by the attorney or agent.



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This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

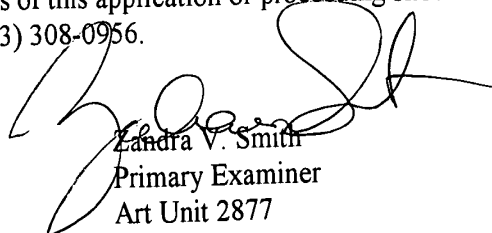
*Papers related to the application may be submitted to Group 2800 by Fax transmission. Papers should be faxed to Group 2800 via the PTO Fax machine located in Crystal Plaza 4. The form of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Machine number is: (703) 308-7722*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gordon J. Stock whose telephone number is (703) 305-4787. The examiner can normally be reached on Monday-Friday, 10:00 a.m. - 6:30 p.m.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

~~gs~~  
gs

August 7, 2003

  
Zandra V. Smith  
Primary Examiner  
Art Unit 2877